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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR		ATTORNEY DOCKET NO.
09/145,987	09/03/98	NAKANISHI	Y	2224-0142P

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EXAMINER	
WHITE,E	
ART UNIT	**PAPER NUMBER**
1623	26

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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trad marks

Office Action Summary	Application No. 09/145,987	Applicant(s) NAKANISHI ET AL.	
	Examiner EVERETT WHITE	Art Unit 1623	

-- The MAILING DATE of this communication appears on th cover sh et with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 June 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13 and 15-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13 and 15-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

15) ☒ Notice of References Cited (PTO-892)
16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
18) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
19) ☐ Notice of Informal Patent Application (PTO-152)
20) ☐ Other: .

1. The Notice of Appeal filed April 18, 2001 and the Appeal Brief file June 8, 2001 have been received and entered into the record.

2. Claims 1-13 and 15-22 are pending in the case.

3. All 35 U.S.C. statutes not cited in this Office action can be found cited in full in a previous Office action.

Prosecution Reopened

4. After consideration of the Appeal Brief filed June 8, 2001, the finality of the rejection dated March 6, 1992 is withdrawn, and prosecution on the merits is reopened.

The Appeal is being held in abeyance.

35 U.S.C. 112, First Paragraph Rejection

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 1-13 and 15-22 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The amendment to Claim 1 in features (ii) and (iii) which indicates that the features were intended to generate free carboxyl groups is not supported in the instant specification. While the specification does support the generation of free carboxyl groups in feature (i), the generation of free carboxyl groups involving the subject matter of features (ii) and (iii) in Claim 1 is not disclosed in the instant specification. How does the alkali metal salt of an acid or alkaline earth metal salt of an acid generate free carboxyl groups in feature (ii)? How does having a total content of alkali metal and alkaline earth metal in 1 gram of cellulose acetate at 5.5×10^{-6}

equivalent or less in terms of ion equivalent allows one to generate free carboxyl groups in feature (iii)?

35 U.S.C. 112 Second Paragraph Rejection

7. Claims 1-13 and 15-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is not clear with regard to the cellulose acetate product that is being claimed and characteristics of the cellulose acetate presented in the body of the claim. Applicants appear to be claiming a cellulose acetate derivative instead of cellulose acetate as indicated since the features in the claim discloses the presence of free carboxyl groups bonded to the cellulose acetate. Please clarify.

In Claim 1, it is not clear if the generated free carboxyl groups are covalently bonded to the cellulose acetate. Please clarify.

It is not clear in Claim 1 how the features recited in steps (ii) and (iii) generate free carboxyl groups which renders Claim 1 indefinite.

Claims 2-13 and 15-22 are also rejected since these claims do not correct or clarify the issues stated above in Claim 1.

35 U.S.C. 102 Rejection

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1 and 4-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Sullivan (US Patent No. 4,426,481).

The Sullivan patent discloses dibasic acid half-ester derivatives of cellulose which derivatives contain free carboxyl groups. Examples of the cellulose acetate derivatives that are disclosed in the Sullivan patent include cellulose acetate hydrogen phthalate, cellulose acetate hydrogen glutarate, cellulose acetate hydrogen succinate, ethyl cellulose acetate hydrogen succinate, and cellulose acetate hydrogen succinate hydrogen phthalate (see column 5, lines 23-31). The succinate and glutarate groups attached to the cellulose acetate in the Sullivan patent anticipates the use of succinic acid and glutaric acid in Claim 7 of the instant application and thus are acids that are within the acid dissociation exponent pKa range recited in Claim 1. The above described cellulose acetate derivatives of the Sullivan patent anticipated the cellulose acetates having features (i) and (ii) of Claim 1.

10. Claims 1 and 4-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Ishii et al (US Patent No. 3,816,150, already of record).

Ishii et al disclose a process for modifying cellulose acetate wherein in example 1 of the patent Ishii et al discloses the preparation of cellulose acetate maleate whereby the maleate group is derived from an acid having an acid dissociation exponent pKa within the range of 1.93 to 4.50. Also see the process of claim 1 of the Ishii et al patent wherein other acids including succinic acid, phthalic acid, trimellitic acid and mixtures thereof may be substituted for maleic acid. The above described cellulose acetate derivatives of the Ishii et al patent anticipated the cellulose acetates having features (i) and (ii) of Claim 1.

35 U.S.C. 103 Rejection

11. Claims 1-13 and 15-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sullivan (US Patent No. 4,426,481) in view of Mochida et al (US Patent No. 4,888,147).

Applicants claim a cellulose acetate having at least one feature selected from the group consisting of (i) said cellulose acetate has carboxyl groups wherein at least part of the carboxyl groups are free carboxyl groups; (ii) said cellulose acetate contains at least one member selected from the group consisting of an acid having an acid dissociation exponent pKa of 1.93 to 4.50 in

water, an alkali metal salt of said acid, and an alkaline earth metal salt of said acid to generate free carboxyl groups; (iii) said cellulose acetate contains an alkali metal or an alkaline earth metal, wherein the total content of the alkali metal and the alkaline earth metal in 1 gram of the cellulose acetate is $5.5x10^{-6}$ equivalent or less in terms of ion equivalent, to generate free carboxyl groups, wherein said cellulose acetate is soluble in an organic solvent.

The Sullivan patent discloses dibasic acid half-ester derivatives of cellulose which derivatives contain free carboxyl groups. Examples of the cellulose acetate derivatives that are disclosed in the Sullivan patent include cellulose acetate hydrogen phthalate, cellulose acetate hydrogen glutarate, cellulose acetate hydrogen succinate, ethyl cellulose acetate hydrogen succinate, and cellulose acetate hydrogen succinate hydrogen phthalate (see column 5, lines 23-31). The succinate and glutarate groups attached to the cellulose acetate in the Sullivan patent embraces the use of succinic acid and glutaric acid in Claim 7 of the instant application and thus are acids that are within the acid dissociation exponent pKa range recited in Claim 1. The instantly claimed invention differ from the Sullivan patent by alternatively indicating in the claims that the total content of the alkali metal and the alkaline earth metal in 1 gram of cellulose acetate is $5.5x10^{-6}$ equivalent of less in terms of ion equivalent. However, this amount of alkali metal and alkaline earth metal in 1 gram of cellulose acetate is known in the art as disclosed in the Mochida et al patent. See column 3, lines 46-49 of the Mochida et al patent wherein the patent discloses adding an amount of water-soluble salt or base preferably from $2x10^{-4}$ to $1x10^{-2}$ gram equivalent per kilogram of cellulose diacetate which covers part of the alkali metal and alkaline earth metal range disclosed in the instant Claims 1-3. See column 3, 2nd paragraph of the Mochida et al patent for examples of bases used in the Mochida et al patent. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the amount of alkali metal and alkaline earth metal in the cellulose acetates of the Sullivan patent in view of the recognition in the art, as evidenced by the Mochida et al patent, that controlling the amount of alkali metal and alkaline earth metal in the cellulose acetate allows one to obtain cellulose acetates that have more desirable characteristic such as producing fibers, films and the like of cellulose acetate wherein fiber breakage and the formation of fish eyes can be prevented.

12. Claims 17 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sullivan (US Patent No. 4,426,481) and Mochida et al (US Patent No. 4,888,147) as applied to claims 1-13 and 15-22 above, and further in view of Ishii et al (US Patent No. 3,816,150, already of record).

Applicants claim a method of producing a cellulose acetate which comprises: (1) mixing a cellulose acetate and an acid having an acid dissociation exponent pKa of 1.93 to 4.50 in water or the metal salt thereof; (ii) treating a cellulose acetate with said acid or said metal salt thereof; or (iii) adding an alkali metal salt of said acid or an alkaline earth metal salt of said acid to a cellulose acetate such that the total content of the alkali metal and the alkaline earth metal in 1 gram of the cellulose acetate is $5.5x10^{-6}$ equivalent or less in terms of ion equivalent.

Ishii et al disclose a process for modifying cellulose acetate wherein in example 1 of the patent Ishii et al discloses the preparation of cellulose acetate maleate wherein the maleate group is derived from an acid having an acid dissociation exponent pKa within the range of 1.93 to 4.50. See the process disclosed in column 6, claim 1 of the Ishii et al patent wherein other acids including succinic acid, phthalic acid, trimellitic acid and mixtures thereof may be substituted for maleic acid. The process steps disclosed by Ishii et al in claim 1 of his patent involves a process for making modified cellulose acetate objects comprising forming mixed cellulose ester made by esterifying (a) cellulose with (b) acetic acid and (c) polybasic carboxylic acid and treating the form product with an aqueous solution of a water soluble polyvalent metal salt. In the above rejection, the Sullivan and Mochida et al patents show that step (iii) of instant Claim 17 that involves cellulose acetate having a total content of alkali metal and alkaline earth metal in 1 gram of cellulose acetate at $5.5x10^{-6}$ equivalent or less in terms of ion equivalent is known in the art. The reaction condition limitations disclosed in Claim 22 are noted but do not set forth any information that is out side the spirit and scope of the Ishii et al patent and therefore are not patentable over the Ishii et al, Sullivan, and Mochida et al patents. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the amount of alkali metal and alkaline earth metal in the cellulose acetates of the Ishii et al patent in view of the recognition in the art, as evidenced by the Sullivan and Mochida et al patent, that controlling the amount of

alkali metal and alkaline earth metal in the cellulose acetate allows one to obtain cellulose acetates that have more desirable characteristic such as producing fibers, films and the like of cellulose acetate wherein fiber breakage and the formation of fish eyes can be prevented.

13. Claims 18-21 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Seo et al (US Patent No. 5,240,665) in view of Ishii et al (US Patent No. 3,816,150) for the reasons already of record on page 5 of the Office action mailed February 25, 1999.

14. Applicant's arguments filed September 18, 2000 have been fully considered but they are not persuasive. The Seo et al patent is cited to show that the presence and use of a dope with cellulose acetate, as set forth in instant claims 18-21, is well known in the art. The patentability of instant claims 18-21 are dependent upon the patentability of the instantly claimed cellulose acetate as set forth in instant claim 1. However, as discussed in the above rejection, the cellulose acetate product does not appear to be patentable over the prior art of record. Therefore, the rejection of claims 18-21 under 35 U.S.C. 103(a) as being unpatentable over the Seo et al and Ishii et al patent is also maintained for the reasons disclosed in the above art rejection over the Sullivan, Mochida et al, and Ishii et al patents.

15. **Summary:** All the claims are rejected.

Examiner's Telephone Number, Fax Number, and Other Information

16. For 24 hour access to patent application information 7 days per week, or for filing applications electronically, please visit our website at www.uspto.gov and click on the button "Patent Electronic Business Center" for more information.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to E. White whose telephone number is (703) 308-4621. The examiner can normally be reached on Monday-Friday from 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Geist, can be reached on (703) 308-1701. The fax phone number for this Group is (703) 308-4556.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-1235.

E. White

White

August 21, 2001

Kathleen Kahler Fonda

Primary Examiner

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